

CLAIMS

1. A method of manufacturing a semiconductor device, comprising the steps of:

preparing a substrate in which a plurality of electrode members are individually placed on one main surface thereof in separated form;

placing a semiconductor chip on the one main surface of the substrate and electrically connecting a plurality of electrodes formed on the one main surface of the semiconductor chip and the plurality of electrode members respectively; and

forming a resin encapsulator for sealing the semiconductor chip and the plurality of electrode members on the one main surface of the substrate.

2. The method according to claim 1, further including a step of separating the semiconductor chip and the plurality of electrode members from the substrate together with the resin encapsulator.

3. The method according to claim 1, wherein the substrate comprises a flexible resin film.

4. The method according to claim 1,
wherein the substrate comprises a flexible resin film having an adhesive layer on one main surface, and

A

wherein the semiconductor chip and the plurality of electrode members are fixed to the substrate by the adhesive layer.

5. The method according to claim 1, wherein the electrodes of the semiconductor chip and the electrode members are electrically connected to one another by bonding wires.

6. The method according to claim 1, wherein the electrodes of the semiconductor chip and the electrode members are electrically connected to one another with protruded electrodes interposed therebetween.

7. The method according to claim 1, wherein the substrate is supported by a frame body of a frame structure.

8. A method of manufacturing a semiconductor device, comprising the steps of:

preparing a substrate having a nip-holding area and a resin encapsulator forming area surrounded by the nip-holding area both provided on one main surface thereof and having a plurality of electrode members individually placed in the resin encapsulator forming area in separated form;

placing a semiconductor chip on the resin

encapsulator forming area of the one main surface of the substrate and electrically connecting a plurality of electrodes formed on the one main surface of the semiconductor chip and the plurality of electrode members respectively; and

nipping the nip-holding area provided on the one main surface of the substrate by an upper mold and a lower mold of a molding die from upward and downward directions and injecting a resin into a cavity formed between the upper and lower molds of the molding die under pressure in a state in which the resin encapsulator forming area of the one main surface of the substrate, the semiconductor chip and the plurality of electrode members are placed inside the cavity, thereby forming a resin encapsulator.

9. The method according to claim 8, further including a step of separating the semiconductor chip and the plurality of electrode members from the substrate together with the resin encapsulator.

10. The method according to claim 8, wherein the substrate comprises a flexible resin film.

11. The method according to claim 8,
wherein the substrate comprises a flexible resin film having an adhesive layer on one main surface, and

wherein the semiconductor chip and the plurality of electrode members are fixed to the substrate by the adhesive layer.

12. The method according to claim 8, wherein the electrodes of the semiconductor chip and the electrode members are electrically connected to one another by bonding wires.

13. The method according to claim 8, wherein the electrodes of the semiconductor chip and the electrode members are electrically connected to one another with protruded electrodes interposed therebetween.

14. The method according to claim 8, wherein the substrate is supported by a frame body of a frame structure.

15. A method of manufacturing a semiconductor device, comprising the steps of:

preparing a substrate having a plurality of electrode members individually placed in a resin encapsulator forming area of one main surface in separated form and a resin layer which covers the one main surface except for an area in which the plurality of electrode members are placed, and is formed with a thickness thinner than that of said each electrode

member;

placing a semiconductor chip on an area for the resin layer, which is opposite to the resin encapsulator forming area of the one main surface of the substrate and electrically connecting a plurality of electrodes formed on one main surface of the semiconductor chip and the plurality of electrode members respectively;

forming a resin encapsulator for sealing the semiconductor chip and the plurality of electrode members within the area for the resin layer, which is opposite to the resin encapsulator forming area of the one main surface of the substrate; and

separating the resin layer, the semiconductor chip and the plurality of electrode members from the substrate together with the resin encapsulator and thereafter removing the resin layer.

16. The method according to claim 15, wherein the substrate is supported by a frame body of a frame structure.

17. A method of manufacturing a semiconductor device, comprising the steps of:

preparing a substrate having a plurality of resin encapsulator forming areas on one main surface thereof and having a plurality of electrode members respectively individually placed in the plurality of resin

RECORDED
SEARCHED
INDEXED
FILED

encapsulator forming areas in separated form;
placing semiconductor chips on the respective resin encapsulator forming areas of the one main surface of the substrate respectively and respectively electrically connecting a plurality of electrodes formed on one main surface of said each semiconductor chip and the plurality of electrode members within said each resin encapsulator forming area;

forming a first resin encapsulator for collectively sealing the semiconductor chips and the plurality of electrode members placed in the respective resin encapsulator forming areas, on the one main surface of the substrate;

dividing the first resin encapsulator every resin encapsulator forming areas to thereby form a plurality of second encapsulators; and

separating the semiconductor chips and the plurality of electrode members from the respective resin encapsulator forming areas of the one main surface of the substrate together with the second resin encapsulators.

18. A method of manufacturing a semiconductor device, comprising the steps of:

preparing a substrate having a plurality of resin encapsulator forming areas on one main surface thereof and having a plurality of electrode members respectively individually placed in the plurality of resin

encapsulator forming areas in separated form, said substrate having resin layers formed thereon each of which covers the one main surface except for an area in which the plurality of electrode members are placed, and has a thickness thinner than that of said each electrode member;

placing semiconductor chips on respective areas for the resin layers, which are opposite to the resin encapsulator forming areas of the one main surface of the substrate, and respectively electrically connecting a plurality of electrodes placed on one main surfaces of said semiconductor chips and the plurality of electrode members within said respective resin encapsulator forming areas;

forming a first resin encapsulator for collectively sealing the semiconductor chips and the plurality of electrode members placed in the respective resin encapsulator forming areas, on said each resin layer;

separating the semiconductor chips and the plurality of electrode members in the respective resin encapsulator forming areas from the substrate together with said first resin encapsulator and said each resin layer, and thereafter removing said each resin layer; and

dividing the first resin encapsulator every chips to thereby form a plurality of second encapsulators.

19. A semiconductor device comprising:

DRAFTED
RECORDED
FILED
SEARCHED
INDEXED
SERIALIZED
FILED

a semiconductor chip having a first main surface and a second main surface opposite to each other, and a plurality of electrodes formed on the first main surface;

a plurality of electrode members each having a first main surface and a second main surface opposite to each other;

a plurality of connecting means which electrically connect the plurality of electrodes of said semiconductor chip and the respective first main surfaces of said plurality of electrode members respectively; and

a resin encapsulator which has a first main surface and a second main surface opposite to each other, and covers said semiconductor chip, said plurality of electrode members and said plurality of connecting means;

wherein said plurality of electrode members have the second main surfaces respectively exposed from the second main surface of said resin encapsulator and separated from the sides of said resin encapsulator.

20. The semiconductor device according to claim 19, wherein the respective second main surfaces of said plurality of electrode members protrude from the second main surface of said resin encapsulator.

21. A method of manufacturing a semiconductor device, comprising the steps of:

(a) preparing a substrate having a resin

encapsulator forming area of one main surface thereof, a plurality of electrode members individually placed in the resin encapsulator forming area in separated form, and a resin layer which covers parts of the sides of said plurality of electrode members and is formed on the one main surface of the substrate with a thickness thinner than that of said each electrode member;

(b) preparing a semiconductor chip with a plurality of electrodes on the main surface thereof;

(c) placing the semiconductor chip on the resin encapsulator forming area of the prepared substrate and respectively electrically connecting the plurality of electrodes of the semiconductor chip and the plurality of electrode members of the substrate;

(d) forming a resin encapsulator for sealing the semiconductor chip and the plurality of electrode members placed in the resin encapsulator forming area, on the one main surface of the substrate; and

(e) separating the substrate and the resin layer from the resin encapsulator and the plurality of electrode members.

22. The method according to claim 21, wherein the electrodes of the semiconductor chip and the electrode members of the substrate are electrically connected to one another by bonding wires.

23. A method of manufacturing a semiconductor device, comprising the steps of:

- (a) preparing a substrate having a resin encapsulator forming area of one main surface thereof, and a plurality of electrode members whose parts of sides are covered with the substrate, and individually placed in the resin encapsulator forming area in separated form;
- (b) preparing a semiconductor chip with a plurality of electrodes formed on the main surface thereof;
- (c) placing the semiconductor chip on the resin encapsulator forming area of the prepared substrate and respectively electrically connecting the plurality of electrodes of the semiconductor chip and the plurality of electrode members of the substrate;
- (d) forming a resin encapsulator for sealing the semiconductor chip and the plurality of electrode members placed in the resin encapsulator forming area, on the one main surface of the substrate; and
- (e) separating the substrate from the resin encapsulator and the plurality of electrode members.

24. The method according to claim 23, wherein the electrodes of the semiconductor chip and the electrode members of the substrate are electrically connected to one another by bonding wires.

25. A method of manufacturing a semiconductor

DECODED DOCUMENT

device, comprising the steps of:

- (a) preparing a substrate having a plurality of resin encapsulator forming areas of one main surface thereof, a plurality of electrode members respectively placed in the plurality of resin encapsulator forming areas, and resin layers each of which covers parts of the sides of said plurality of electrode members and is formed on the one main surface of the substrate with a thickness thinner than that of said each electrode member;
- (b) preparing a plurality of semiconductor chips each having a plurality of electrodes formed on the main surface thereof;
- (c) placing the semiconductor chips on the resin encapsulator forming areas of the prepared substrate and respectively electrically connecting the plurality of electrodes of said each semiconductor chip and the plurality of electrode members of the substrate within said each resin encapsulator forming area;
- (d) forming a resin encapsulator for collectively sealing the semiconductor chips and the plurality of electrode members placed in the respective resin encapsulator forming areas, on the one main surface of the substrate; and
- (e) separating the resin encapsulator between the respective resin encapsulator forming areas; and
- (f) separating the substrate and the resin layers

100-1000000000

from the resin encapsulator and the plurality of electrode members.

26. The method according to claim 25, wherein the electrodes of the semiconductor chip and the electrode members of the substrate are electrically connected to one another by bonding wires.

27. The method according to claim 25, wherein in said (e) step, the resin encapsulator is cut by a dicing method.

28. A method of manufacturing a semiconductor device, comprising the steps of:

(a) preparing a substrate having a plurality of resin encapsulator forming areas of one main surface thereof, and a plurality of electrode members whose parts of sides are covered with the substrate, and respectively placed in the resin encapsulator forming areas;

(b) preparing a plurality of semiconductor chips each having a plurality of electrodes formed on the main surface thereof;

(c) placing the semiconductor chips on the resin encapsulator forming areas of the prepared substrate and respectively electrically connecting the plurality of electrodes of said each semiconductor chip and the plurality of electrode members of the substrate within

said each resin encapsulator forming area;

(d) forming a resin encapsulator for collectively sealing the semiconductor chips and the plurality of electrode members placed in the respective resin encapsulator forming areas, on the one main surface of the substrate; and

(e) separating the resin encapsulator between the respective resin encapsulator forming areas; and

(f) separating the substrate from the resin encapsulator and the plurality of electrode members.

29. The method according to claim 28, wherein the electrodes of said each semiconductor chip and the electrode members of the substrate are electrically connected to one another by bonding wires.

30. The method according to claim 29, wherein in said (e) step, the resin encapsulator is cut by a dicing method.

Add A>